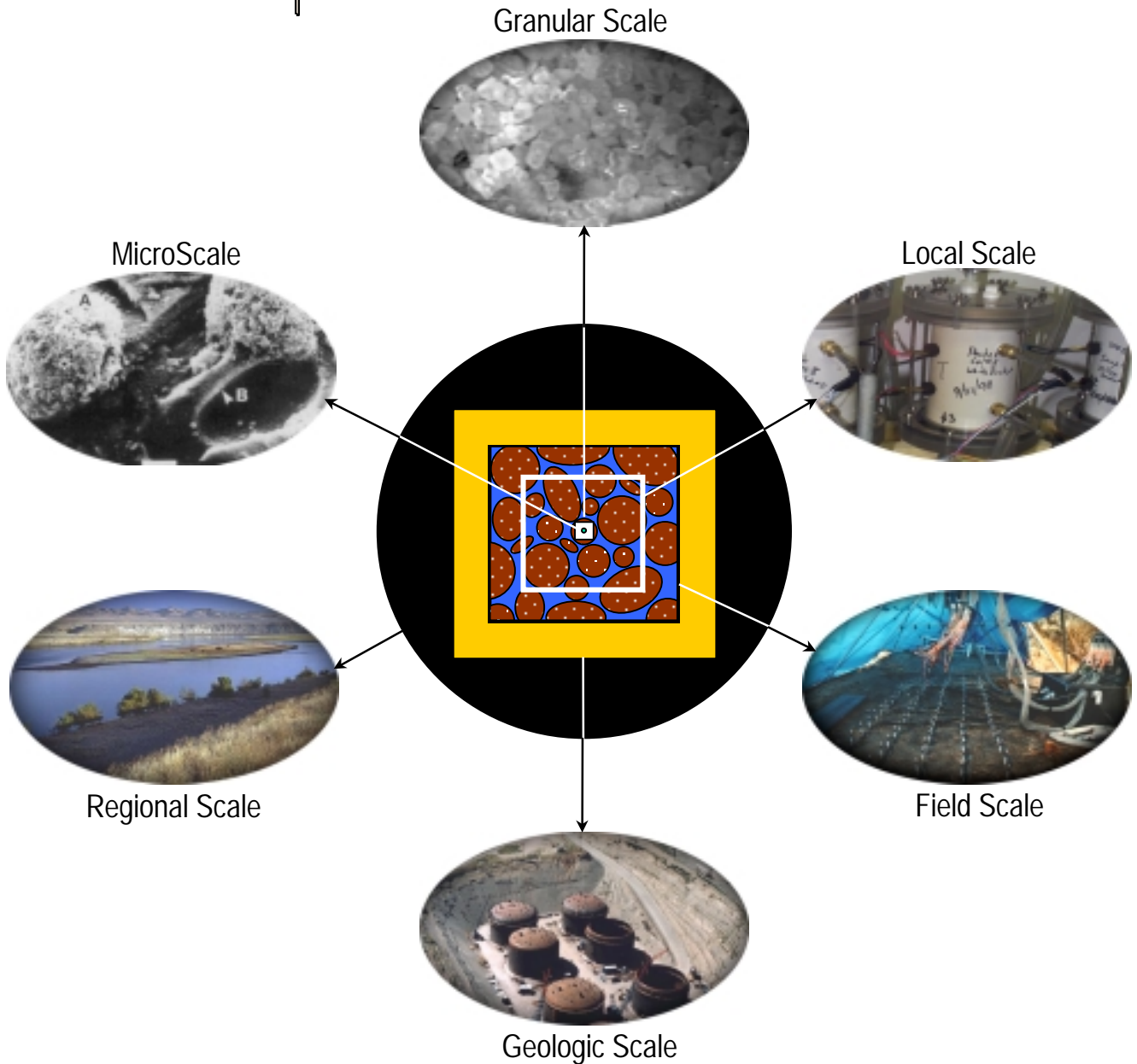




Hanford Site

Groundwater/Vadose Zone Integration Project



Advanced Vadose Zone Characterization Workshop
Richland, Washington
January 19-20, 2000

AGENDA

Groundwater/Vadose Zone Integration Project
Advanced Vadose Zone Characterization Workshop
Richland, Washington

January 19-20, 2000

Wednesday, January 19, EMSL Auditorium

Session 1- Purpose and Focus of Workshop, Characterization Needs

PRESIDING: Andy Ward, Pacific Northwest National Laboratory (PNNL)

7:30 **COFFEE, TEA, JUICES/ BREAKFAST BREADS in Training Room**

7:55 **Welcome and Introductory Remarks (Purpose and Objectives).**
Andy Ward, Pacific Northwest National Laboratory (PNNL).

8:10 **Hanford Site Science and Technology Initiative.** Jim Hanson, Department
of Energy, Richland Operations (DOE-RL).

8:15 **Office of River Protection.** Rob Yasek, Department of Energy, Office of
River Protection (DOE-ORP).

8:20 **Groundwater/Vadose Zone Science and Technology Initiatives.** Mark
Freshley, Pacific Northwest National Laboratory (PNNL).

8:25 **200 Area Soil Sites.** Bruce Ford, Bechtel Hanford, Inc. (BHI).

8:30 **Time Form Vadose Zone (TFVZ) and Immobilized Low-activity Waste
(ILAW).** Fred Mann, River Protection Program (RPP) and Immobilized
Low Activity Waste (ILAW) Projects, Fluor Federal Services (FFS).

8:50 **Overview of Vadose Zone Test Facility and Broad Test Plan.** Glendon
Gee, Pacific Northwest National Laboratory (PNNL).

9:00 **Review of Geophysical Characterization Methods Used at the Hanford
Site.** George Last and Duane Horton, Pacific Northwest National
Laboratory (PNNL).

9:15 **Review of Hydraulic Properties for Sediments in the 200 Areas.** Raz
Khaleel, Fluor Federal Services (FFS).

9:30 **Review of the Sisson and Lu Experiment.** Buck Sisson, Idaho National

Environmental and Engineering Laboratory (INEEL).

9:45 **BREAK – Snacks Provided in Training Room**

Wednesday, January 19, EMSL Auditorium
Session 2- Field-Scale Tracer Techniques

PRESIDING: Everett Springer, Los Alamos National Laboratory (LANL).

- 10:00 **Tracer Technology for Field Testing**, Everett Springer, (LANL).
- 10:15 **Isotopic Tracers for Quantifying Chemical Processes During Transport**, Don DePaolo, Geology and Geophysics Dept., Berkeley.
- 10:30 **Field Scale Dye Tracer Experiments: A Method for Delineating Vadose Zone Flow Processes**. Jim.Brainard, Sandia National Laboratories (SNL).
- 10:45 **Field Tracer Tests To Characterize the Vadose Zone Geochemical and Hydrologic Properties**, Prasad Saripalli, Amy Gamerdinger, Tyler Gilmore, and Jeff Serne, Pacific Northwest National Laboratory (PNNL).
- 11:00 **Monitoring of Chemical Transport in the Vadose Zone at Hanford**. Boris Faybishenko, Lawrence Berkeley National Laboratory (LBNL).
- 11:15 **In-Situ, Real Time Characterization of Soil Processes with Fiber Optic Mini-Probes**, Masoud Ghodrati, Ecosystem Sci. Div., UC Berkeley.
- 11:30 **Discussion of Tracer and Transport Monitoring Techniques**.
- 12:00 **LUNCH – Buffet Provided in Training Room**.

Wednesday, January 19, EMSL Auditorium
Session 3- Physical Characterization Methods

PRESIDING: Buck Sisson, Idaho National Environmental and Engineering Laboratory (INEEL)

- 1:00 **Core- and Outcrop-Scale Permeability Mapping Using IR Imaging**. Philip Long, Pacific Northwest National Laboratory (PNNL).
- 1:15 **Monitoring and Characterization Equipment Development at INEEL**. Earl Mattson, Idaho National Engineering Laboratory (INEEL).
- 1:30 **Unsaturated Hydraulic Properties of Uncontaminated WMA S-SX Vadose Zone Sediments**. Bob Lenhard, Pacific Northwest National Laboratory (PNNL).

- 1:45 **Viability of Rapid In-Situ Measurement of Hydraulic Properties,**
John Wilson, New Mexico Inst. Mining and Technology, Socorro, NM.
- 2:00 **Uncertainty and Upscaling.** Philip Meyer, Pacific Northwest National
Laboratory (PNNL).
- 2:15 **Discussion on Soil Physical Characterization Methods.**
- 2:45 **BREAK – Snacks Provided in Training Room.**

Wednesday, January 19, EMSL Auditorium
Session 4- Subsurface Geophysical Methods: Part I

PRESIDING: Phil Long, Pacific Northwest National Laboratory (PNNL)

- 3:00 **Application of Geophysical Methods for Characterization and
Monitoring of Properties Controlling Flow and Transport in the Vadose
Zone at the Hanford Site.** Ernie Majer, Lawrence Berkeley National
Laboratory, (LBNL).
- 3:15 **In Situ Characterization of Flow and Transport in the Vadose Zone.**
Charles Carrigan, Lawrence Livermore National Laboratory (LLNL).
- 3:30 **Effects of Fluid Distribution on Measured Geophysical Properties for
Partially Saturated, Shallow Subsurface Conditions.** Patricia Berge,
Lawrence Livermore National Laboratory (LLNL).
- 3:45 **Use of Radar Methods to Determine Moisture Content in the Vadose
Zone.** Rosemary Knight, University of British Columbia.
- 4:00 **Cross-Hole Radar Tomography in an Alluvial Gravel Deposit,** William
Clement, Boise State University.
- 4:15 **Hydraulic/Pneumatic Tomography: A Site Characterization Method.**
T –C. Jim Yeh, University of Arizona, Tucson, AZ.
- 4:30 **General Discussion Subsurface Geophysical Methods: Part I.**
- 5:00 **ADJOURN.**

Thursday, January 20, EMSL Auditorium
Session 5- Minimally Invasive Techniques

PRESIDING: Andy Ward, Pacific Northwest National Laboratory (PNNL)

- 7:30 **COFFEE, TEA, JUICES / BREAKFAST BREADS in Training Room**
- 7:55 **Session Introductory Remarks** Andy Ward (PNNL)
- 8:00 **Microhole Drilling and Instrumentation Technology**, Jim Albright, Los Alamos National Laboratory (LANL).
- 8:15 **Estimation of Soil Hydraulic Properties with the Cone Permeameter.**
Molly Gribb, University of South Carolina.
- 8:30 **CPT Vadose Zone Characterization and Monitoring Tools.** Wes Bratton, Applied Research Associates, Richland, WA.
- 8:45 **Direct-push Spectroscopic and Imaging Based Sensor Systems for Characterization of Vadose Zone Hydrologic Conditions and Contaminant Distributions.** Steve Lieberman, Space and Naval Warfare Systems Center, San Diego, CA.
- 9:00 **Development of a Miniaturized In Situ X-Ray Diffraction/L-Ray Fluorescence Instrument for Vadose Zone Characterization,** David Bish, David Vaniman, Steve Chipera, Los Alamos National Laboratory (LANL).
- 9:15 **Discussion of Minimally Invasive Techniques.**
- 9:45 **BREAK – Snacks Provided in Training Room.**

Thursday, January 20, EMSL Auditorium
Session 6- Subsurface Geophysical Methods: Part II

PRESIDING: Ernie Major, Lawrence Berkeley National Laboratory

- 10:00 **An Integrated Approach for Characterizing and Monitoring the Vadose Zone and Aquifer.** T.-C. Jim Yeh, University of Arizona, Tucson, AZ.
- 10:15 **Application of Oilfield Drilling and Borehole Geophysical Technologies to Vadose Zone Characterization.** Richard E. Lewis, Schlumberger, HydroGeological Technologies and John Ullo, Schlumberger-Doll Research.

- 10:30 **Electrical Resistance Tomography- 4D Underground Imaging.** Bill Daily, Abe Ramirez, and Robin Newmark, Lawrence Livermore National Laboratory (LLNL).
- 10:45 **High Resolution Resistivity: Applications and Case History.** Jim Fink, Hydrogeophysics, Tucson, AZ.
- 11:00 **Crosswell Electromagnetic Imaging for Characterizing the Vadose Zone.** Gregory Newman, Sandia National Laboratory (SNL) and Mike Hoversten, Lawrence Berkeley National Laboratory (LBNL).
- 11:15 **3D P and S Wave Seismic Imaging of Shallow Structures.** Mike Ritzwoller, Jie Zhang, Anatoli L. Levshin, Center for Imaging the Earth's Interior, Department of Physics, University of Colorado at Boulder, CO.
- 11:30 **Magnetic Resonance Dowsing.** Peter Weichman, BlackHawk Geometrics, Boulder, Colorado.
- 11:45 **General Discussion Subsurface Geophysical Methods: Part II.**
- 12:15 **LUNCH – Buffet Provided in Training Room.**

Thursday, January 20, EMSL Auditorium
Session 7- VZTF Data Needs and Experimental Design

PRESIDING: Glendon Gee, Pacific Northwest National Laboratory (PNNL)

- 1:30 **Field Experiments and Characterization for Reactive Radionuclide Transport.** Peter Lichtner, Los Alamos National Laboratory (LANL).
- 1:50 **Experimental Design Issues-General Discussion, Group**
- 3:10 **BREAK – Snacks Provided in Training Room**
- 3:30 **Wrap Up**
- 4:00 **ADJOURN**